

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CM2174/MH	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 00/ 17274	International filing date (day/month/year) 23/06/2000	(Earliest) Priority Date (day/month/year) 09/07/1999
Applicant THE PROCTER & GAMBLE COMPANY		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

PROCESS FOR MAKING IMINE COMPOUNDS

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☒ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

There is provided a process for producing imines, in particular suitable for industrial process, whereby high yields of the imine is obtained. This is achieved by having a selected temperature range upon the contacting of the amine containing compound with the active aldehyde and/or ketone.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/17274

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07C249/02 C11D3/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 625 710 A (RIZZI GEORGE P) 7 December 1971 (1971-12-07) the whole document	1-20
X	EP 0 392 619 A (QUEST INT) 17 October 1990 (1990-10-17) the whole document	10-20
A	---	1-9
X	US H1468 H (JILL B COSTA; MICHAEL S SHOWELL) 1 August 1995 (1995-08-01) column 4, line 38 - line 41	10-20
A	---	1-9
	--- -/--	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

20 September 2000

Date of mailing of the international search report

09/10/2000

Name and mailing address of the ISA

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Authorized officer

Janus, S

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/17274

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KAMOGAWA H ET AL: "Chemical release control- Schiff bases of perfume aldehydes and aminostyrenes" JOURNAL OF POLYMER SCIENCE, POLYMER CHEMISTRY EDITION, US, JOHN WILEY AND SONS. NEW YORK, vol. 20, page 3121-3129 XP002084908 ISSN: 0887-624X the whole document	10-20
A	----	1-9
X	TEXIER-BOULLER, F.: "A Simple, Convenient and Mild Synthesis of Imines on Alumina Surface without Solvent" SYNTHESIS, June 1985 (1985-06) - July 1985 (1985-07), pages 679-680, XP002126039 table 1	1,2,5,7, 9
X	----- ENDERS, D. ET AL.: "Asymmetric Synthesis of alpha'-Silylated alpha-Iodo Ketones via Iodination with Trifluoroiodomethane" SYNLETT, November 1997 (1997-11), pages 1271-1272, XP002126040 * step a) * -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/17274

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3625710	A	07-12-1971	CA 923502 A	27-03-1973
			US 3839366 A	01-10-1974
EP 0392619	A	17-10-1990	AT 124078 T	15-07-1995
			DE 69020219 D	27-07-1995
			DE 69020219 T	02-11-1995
			JP 2649983 B	03-09-1997
			JP 3205495 A	06-09-1991
			US 5204023 A	20-04-1993
			US 5789010 A	04-08-1998
			ZA 9002789 A	24-12-1991
US H1468	H	01-08-1995	EP 0679714 A	02-11-1995
			JP 8053699 A	27-02-1996

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CM2174/MH	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/17274	International filing date (day/month/year) 23/06/2000	Priority date (day/month/year) 09/07/1999
International Patent Classification (IPC) or national classification and IPC C07C249/02		
Applicant THE PROCTER & GAMBLE COMPANY et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

- ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 27/10/2000	Date of completion of this report 24.09.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Janus, S Telephone No. +49 89 2399 8333 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/17274

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
Description, pages:

1-88 as originally filed

Claims, No.:

1-20 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/17274

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application.
- ☒ claims Nos. 1-20 (all in part).

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
 - ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-20 (all in part) are so unclear that no meaningful opinion could be formed (*specify*):
see separate sheet
 - ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
 - ☐ no international search report has been established for the said claims Nos. .
2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:
- ☐ the written form has not been furnished or does not comply with the standard.
 - ☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	4,6,8,14-20
	No:	Claims	1,2,5,7,9-13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	4,6,8,14-20
Industrial applicability (IA)	Yes:	Claims	1-20

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US00/17274

No: - Claims

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

Concerning Section III

As already indicated by the international searching authority, the application is regarded as relating to the preparation of imines (instead of "amine reaction products" as presently expressed throughout the application) from amines and aldehydes or ketones.

The term "active ketone and/or aldehyde" is regarded as unclear, since it does not have a generally accepted meaning; in particular, it is not possible to determine the exact activity (chemical, biological, catalytical,...) of the compounds. The general terms used in claim 5 are of no help for interpreting this unclear term. For this reason, examination will be made on the assumption that all aldehyde and ketone compounds may be used as starting materials for the claimed process.

Also the expression "in the absence of solvent and/or drying agent" leaves the impression that one of these may in fact be present. In the light of the examples, however, it has been assumed that neither of these may be present during the claimed process.

Despite these unclarities, an effort has been made to examine as much as possible of the claimed scope, as interpreted in the light of the examples..

Concerning Section V

1. US-A-3,625,710 (D1) discloses the preparation of compounds of the formula $R-CH_2-N=CH-R'$ wherein R is a furfuryl group, R' being a C₃-C₆ terminally branched alkyl group, or both R and R' are isobutyl groups. The reaction takes place at 25°C in the absence of a solvent; NaOH pellets are added after the reaction has taken place in order to remove the water which forms during the reaction. Therefore, the reaction itself takes place in the absence of a drying agent, which implies that this prior process takes away the novelty of the process according to present claims 1-3 and 5 (Art. 33.2 PCT).

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/17274

2. Insofar as the novelty of the process claims is concerned, your attention is also drawn towards documents Texier-Boullet, F., Synthesis, June/July 1985, pp. 679-80 (D2) and Enders, D. et al., Synlett, November 1997, pp. 1271-1272 (D3).

These documents also disclose processes for the preparation of imines from the corresponding amines and aldehydes or ketones without solvents and drying agents and at temperatures within the ranges defined in the present claims. Your attention is in particular drawn towards D2, Table 1, and D3, step a). Also to be noted is the use of cinnamaldehyde as starting material in D2 (see entry b) of table 1).

These prior processes are regarded as anticipating the subject-matter of present claims 1, 2, 5, 7 and 9 (Art. 33.2 PCT).

3. Imines are well-known compounds. The fact that they are "obtainable" (i.e. not necessarily obtained) by the process of claims 1-9 can by no means be regarded as a limiting feature. The products claimed in claims 10-13 also lack therefore novelty (Art. 33.2 PCT).
4. Concerning the question of the presence of inventive step in the remaining subject-matter, essentially the novel part of claims 1-9, as well as claims 14-20, the following can be said at this stage : the problem to be solved by the application appears to be the provision of an alternative to the processes for the preparation of imines as slow release agents for e.g. perfumery aldehyde/ketone compounds, such as those disclosed e.g. in EP-A-392 619, US-H-1468 and the Kamogawa citation of the international search report (D4-D6).

The solution provided by said claims consists essentially of carrying out the process without solvent and without drying agent. Since such a process is known from documents such as D1-D3, the skilled person would have immediately recognised that such a procedure may provide an adequate solution to said problem. For these reasons, inventive step does not appear to be present in the novel part of the subject-matter of present claims 1-9, as well as of claims 14-20 (Art. 33.3 PCT).

Concerning Section VII

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1-D6 is not mentioned in the description, nor are these documents identified therein.

Concerning Section VIII

1. Features introduced by terms like "preferably", "e.g.", or "more preferably" (see e.g. claims 2, 4, 6 and 7) have no limiting effect on the scope of the claim including them. The presence of such non-limiting features is however detrimental to the conciseness of said claim(s), contrary to Art. 6 PCT.
2. Claim 4 is not supported by the description (Art. 6 PCT). Not only does it lack a counterpart (R. 5.1(a)(iii) PCT), but also to be noted is the fact that none of the examples relate to the use either a twin screw extruder or a mixing tank.

In addition, it must be stated that the subject-matter of this claim does not enjoy the right of priority of the application, as this feature was not mentioned in the prior application ep89401736.

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 January 2001 (18.01.2001)

PCT

(10) International Publication Number
WO 01/04084 A1

- (51) International Patent Classification⁷: C07C 249/02, C11D 3/50
- (21) International Application Number: PCT/US00/17274
- (22) International Filing Date: 23 June 2000 (23.06.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
99401736.6 9 July 1999 (09.07.1999) EP
00870067.6 12 April 2000 (12.04.2000) EP
- (71) Applicant (for all designated States except US): THE PROCTER & GAMBLE COMPANY [US/US]; One Procter & Gamble Plaza, Cincinnati, OH 45202 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BESSELIEVRE, Richard [FR/FR]; 30 Allee des Troenes, 91440 Bures sur Yvette (FR). SMETS, Johan [BE/BE]; Bollenberg 79, B-3210 Lubbeek (BE). WEVERS, Jean [BE/BE]; Heide 17, B-1840 Steenhuffel (BE).
- (74) Agents: REED, David, T. et al.: The Procter & Gamble Company, 5299 Spring Grove Avenue, Cincinnati, OH 45217-1087 (US).
- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, EE, FI, FR, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS FOR MAKING AMINE COMPOUNDS

(57) Abstract: There is provided a process for producing amines, in particular suitable for industrial process, whereby high yields of the imine is obtained. This is achieved by having a selected temperature range upon the contacting of the amine containing compound with the active aldehyde and/or ketone.

WO 01/04084 A1

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/17274

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C07C249/02 C11D3/50

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07C C11D

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, BEILSTEIN Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	---	1-9
X	US H1468 H (JILL B COSTA; MICHAEL S SHOWELL) 1 August 1995 (1995-08-01) column 4, line 38 - line 41	10-20
A	---	1-9
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

20 September 2000

Date of mailing of the international search report

09/10/2000

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INTERNATIONAL SEARCH REPORT

Internat. Application No.

PCT/US 00/17274

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KAMOGAWA H ET AL: "Chemical release control- Schiff bases of perfume aldehydes and aminostyrenes" JOURNAL OF POLYMER SCIENCE, POLYMER CHEMISTRY EDITION, US, JOHN WILEY AND SONS. NEW YORK, vol. 20, page 3121-3129 XP002084908 ISSN: 0887-624X the whole document	10-20
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X	TEXIER-BOULLER, F.: "A Simple, Convenient and Mild Synthesis of Imines on Alumina Surface without Solvent" SYNTHESIS, June 1985 (1985-06) - July 1985 (1985-07), pages 679-680, XP002126039 table 1	1,2,5,7, 9
X	----- ENDERS, D. ET AL.: "Asymmetric Synthesis of alpha'-Silylated alpha-Iodo Ketones via Iodination with Trifluoroiodomethane" SYNLETT, November 1997 (1997-11), pages 1271-1272, XP002126040 * step a) * -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/17274

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3625710	A	07-12-1971	CA 923502 A	27-03-1973
			US 3839366 A	01-10-1974
EP 0392619	A	17-10-1990	AT 124078 T	15-07-1995
			DE 69020219 D	27-07-1995
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			JP 2649983 B	03-09-1997
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			US 5204023 A	20-04-1993
			US 5789010 A	04-08-1998
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US H1468	H	01-08-1995	EP 0679714 A	02-11-1995
			JP 8053699 A	27-02-1996